PERFORMANCE STANDARDS SUMMARY WITH INFORMAL QUESTIONS/COMMENTS FOR EPA

Lower 8.3 Miles of the Lower Passaic River

General comment on all performance standards - the performance standards cover information that would typically be included in the Design Team's work plans, specifications, and design, and may therfore not be needed, at least not in the level of detail that they have been prepared. EPA, its consultants and experts will have input to all remedial design deliverables via the review and comment process, and be afforded the opportunity to add requirements as the remedial design is developed. We recommend against the use of prescriptive performance standards because additional information obtained during the pre-design investigation and remedial design process may negate the need for some of these standards or introduce conflicts between the design and a performance standard that was developed before sufficient information was available to support it. Developing standards that will be in the public record will introduce opportunities for conflicting information between these standards and the reports, work plans, and other project documents that will be based on much more rigorous data and more complete information.

Performance Standard	Key Components Associated with Standard	Additional Information from EPA on Standards	Questions or Comments for EPA	Notes from 1/26/17 Meeting and Responses to Follow-on Comments
Cap Design and Construction	**Dredge Design**	Design must not increase potential for flooding. Depth of dredging/volume could be reduced if thinner caps are designed that are equivalent to cap design below.	Can we have limited areas with little or no dredging prior to capping?	Stabilization layer needed very soon after dredging and bathymetry survey. Consider thin cap with buffer on top to make clean cap surface later. Can have limited areas next to bulkheads with no dredging as long as it's made up in the same transect.
	RM 0 to RM 0.6 - dredge to 30 ft below MLW			
	RM 0.6 to RM 1.7 - dredge to 20 ft below MLW			
	RM 1.7 to RM 8.3 - dredge an estimated 2.5 feet below MLW			
	Sediment Handling and Processing Design	Dewatered sediment can be transported via barge, rail or truck, to a permitted disposal facility in the U.S. or Canada. Production rate through the plant must not limit dredging or capping production.		
	Barge or pump to processing facility in the vicinity of the shoreline			
	Dewater sediment using method capable of high production			
	Separate sand from sediment for possible beneficial reuse			
	Transport dewatered sediment to permitted disposal facility			
	Cap Design	Cap design is flexible - actual design is risk-based and performance-oriented. If thinner caps are designed, they must be equivalent to this design in performance, achieve required depths in the nav channel below RM 1.7, and not increase flooding potential.	An option in stable, less contaminated sections of the river would be to increase flood capacity by decreasing the cap thickness so the post remediation bed elevation is below existing conditions. The additional water depth will promote deposition. Cannot create more flood capacity after cap is installed.	
	Cap design - 2 feet of sand plus armoring as required			
	Must be able to withstand 100-year storm event			
	Must be able to withstand propwash from vessels, ice rafting, and ice jams without measureable loss or release of COCs (Dioxin, Total PCBs, Mercury, and Total DDx).	Should meet or exceed capping guidance from USACE and EPA for erosion protection, chemical isolation, bioturbidity, consolidation, scour from propeller wash, ice rafting, and ice jams. Measurable loss defined as loss of 3 inches of cap thickness over 4,000 sf or over 20% contiguous area of a CU. Breakthrough of COCs is defined as measurable concentrations in the portion of cap just above the chemical isolation layer.		
	The thickness and composition of the placed chemical isolation layer must be adequate to prevent breakthrough of COCs into the bioturbation zone for at least TBD (e.g., 250) years.		This implies COC concentrations would be non-detect - was this intended?	Breakthrough should be based on the PRG for the COCs (i.e., risk-based).
	Based on COC concentrations at the post-dredge surface, as determined during the PDI	Cores must have adequate lateral spacing and vertical resolution to allow for this determination within acceptable tolerances and which allows for design of the chemical isolation layer of the cap consistent with EPA and USACE capping guidance.	The project remedial activities section describes the need to evaluate additional high concentration pollutants. Are the additional pollutants included in the risk evaluation more than the 4 COCs? If so, the added contaminants need to be identified.	
	Design for dredging to a clean neatline and backfill to be placed from RM 0 to RM 1.7, or, if neatline not clean include cap	"Clean boundary" is defined as free of contamination.		
	Capping of Mudflats		In all but the deepest areas, a significant armor layer is required to be part of the cap. Have data been compiled on ice jams/rafting on the LPR? How does this apply to mudflat areas?	
	1 foot of sand + 1 foot of habitat layer			
	Cap Installation	RD Team to select means and methods, to be guided by the engineering performance standards. First lift is to stabilize residuals, subsequent lifts for chemical isolation.	Could areas be identified (lower contamination, etc.) where the estimated residuals are less of a concern, such that the stabilization layer would not be needed?	
	Entire area except where all contamination is removed			
	Must be placed in two or more lifts			
	Verify sufficient dredging prior to installation			
	Stabilization of residuals to be performed immediately after dredging	Install sand lift immediately after dredging.	What does "immediately" mean – depending on definition, could be very expensive requirement. This requirement assumes significant residuals are generated regardless of dredging method and assumes that they must be covered to prevent remobilization.	
	Subsequent lifts of cap to be placed prior to the end of each season.	This will prevent damage from significant storm events. Storm event currently undefined.		
	Cap surface COC concentrations in the upper six inches after placement in a CU must be TBD (e.g. weighted average across CU does not exceed 20% of RGs) AND/OR must be no more than TBD % of the RGs at the end of construction.		Does the COC concentration in the top 6 inches apply to armor layer? How would this be measured?	
	Post-placement cap thickness must be verified as meeting design			
	Final cap surface elevation must be at or below the pre-dredge baseline sediment surface elevation over greater than 95 % of the area.	The baseline surface elevation is based on the bathymetry for 201x before the start of construction.		
	Institutional Controls for Caps	To be specified at a later date, but cap design must comply with these.		
	Long-term Monitoring and Maintenance of Caps	Needs to specify types of measurements and frequency.	Long term monitoring should begin a number of years after remediation is complete. A post remediation monitoring event is warranted but the long term monitoring should allow the river system to equilibrate to a normal condition before long term monitoring begins.	
	Cap Measurements			
	Dredge surface elevation			
	Place cap thickness of each layer			
	Placed thickness of mudflat reconstruction layer			
	Cap surface elevation	Immediately after placement, one year post-placement, and after a significant storm event		
		Establish new baseline elevation if consolidation occurs, repair cap if erosion or damage has occurred.		
Resuspension	**Resuspension during Dredging and Capping**	Concern is for migration to upper 9 miles, Newark Bay, and to the New York-New Jersey Estuary. "...these standards together will serve to verify that the various cap layers and their design thicknesses will be placed as intended in the desired locations to secure the long-term performance and effectiveness of the cap."	Concentration is based on upper 2.5 feet or so that is dredged. Thickness of settled layer is assumed to be about an inch (?).	Grain size information is not representing differences in a grid cell.
	Design to limit migration of COCs from dredging/capping operations			
	Speed of project vessels (dredging platform, tugs, and barges) and their		This statement of "no resuspension" from project vessels is impractical and likely can't be enforced.	
	movement shall be controlled (as per N.J.S.A. 12:7-45 Speed of Power			
	Vessels and N.J.A.C. 13:82-1.7 Speed – NJ State Police Marine Services			
	Bureau) so that they do not create excessive wakes and do not			
	contribute to resuspension.			
	No dredging or capping will be performed in an area when the river		Could be a costly criteria depending on when these conditions occur relative to in-water work windows and may be incompatible with other PS.	
	velocity is more than four feet per second (see Attachment E			
	for supporting analysis).			
	Stabilization of dredging residuals in a CU must be completed immediately		See comments above on "immediate".	
	after EPA's acceptance of the dredged surface in order to minimize			
	resuspension. However, there must be no placement of subsequent		Seems very challenging to implement and track all these conditions; particularly the COCs which can't be analyzed in real time and take several days for results. Will need to have developed relationships for each COC and turbidity to be able to implement these evaluations. Turbidity and TSS have not been shown to correlate very	
	lifts of capping material in a CU when dredging is being performed in			

	an adjacent CU or within a distance of 1000 feet upriver or downriver.			
	Required Response/Corrective Actions		Seems very challenging to implement and track all these conditions; particularly the COCs which can't be analyzed in real time and take several days for results. Will need to have developed relationships for each COC and turbidity to be	
			Since the ROD references the performance standards, we recommend keeping them as flexible as possible and not too prescriptive. For example, resuspension could be addressed as part of adaptive management, on an as-needed basis determined during implementation of the remedy. This would avoid requiring measures that may be needed at some but perhaps not all locations.	
Productivity	**Productivity for Dredging and Capping**	There standards are subordinate to the other two primary standards.	How flexible is the construction schedule?	Need to complete construction work in 6 years, 5 yrs. dredging @ 583,000 cy per year and 1 year to complete capping.
	Maintain operations at required pace to meet schedule in the ROD			
	Remove approximately 3.5 million cubic yards	Bridges constrain access by vessels, so coordination with authorities would be required if mechanical dredging is performed. This would impact productivity. The use of hydraulic dredging would avoid these problems.		
	Place 2-foot thick sand cap, with armor over about 110 acres of cap		How has this requirement been integrated into the dredging production rates? This could be a significant issue for the schedule.	
	No in-river activities (dredging or capping) during 17-week fish window			
	Up to 3 weeks of non-consecutive downtime each year for equipment repair and weather-related delays			
	Construction of a processing facility sized to handle approximately 739,200 cy per season (average of 3,850 in situ cy per day)			
	Capping rate assumed to keep up with dredging.		We recommend removing requirements for annual dredging volumes and dredging six days/week and instead rely on the contractor to determine how best to meet the schedule.	
	Remedial design to determine minimum production quota based on:			
	dredging removal method, rates and sequence			
	sediment processing facility location and size			
	volume of sediment to be removed			
	length of fish window		We recommend against having a productivity standard, and instead leaving this up to the contractors who will pursue winning this work competitively. Experienced contractors will want to complete the work in the most cost-effective and efficient way possible which is typically the shortest practical schedule. Imposing productivity standards compels contractors to assume contingencies and additional time for unknowns in the performance standards, such as how often their work may be interrupted for high river flow.	
	equipment breakdown and weather delays			
	cap placement method, rates and sequence			
	distance between capping and dredging operations			
	Air Quality, Navigation, Odor, Noise and Light Standards		Quality of Life PS (QoLPS) will be covered in the Community HASP.	Have complaint management system, traffic management plan, will always have some bridge openings. LB/EPA to provide information on references and/or local regulations.
	Establish baseline conditions over a month or more			
	Have complaint management system			
	Follow regulatory requirements			
	Goals:			
	Minimize short-term impacts to surrounding communities	Standards were developed to achieve the objectives of the ROD in minimizing impacts to residents, workers and others while maintaining some flexibility in the remedial design. These standards are performance-oriented rather than prescriptive with regard to means and methods, and were developed to comply with local, state, & federal ARARs. The standards include goals to be achieved and BMPs from the pilot dredging project and other projects. The standards were also designed to work together and individually to achieve project goals.		
	Utilize EPA's Clean and Green Policy			
	- promote sustainable technologies			
	- protect human health and the environment by achieving RA goals			
	- support human and ecological use/reuse of remediated land			
	- minimize impacts to water quality and water resources			
	- reduce air emissions and greenhouse gas production			
	- minimize material use and waste production			
	- conserve natural resources and energy			
	Performance Standards for Air Emissions and Odors	Compliance with these performance standards must be		
	Comply with state and federal emission limits (includes during PDI,	demonstrated during RD and verified during RA. This		
	RD, RA, and site restoration activities)	includes potential impacts at the sediment processing		
	Remedial "program" must be designed to minimize emissions and odors,	facility in addition to the river. Applies differently to		
	as documented during RD based on modeling, calculations, etc.	stationary vs. mobile sources.		
	for emissions and identification of areas/activities likely to cause	RD team to conduct "detailed analyses" for in-river and		
	odors and developing contingency plans to address these odors.	upland areas.	In the performance standards for air emissions, EPA states that they do not expect air emissions to exceed established air emissions criteria. Has any modeling been done or have the previous levels observed during the Tierra removal action been extrapolated to a higher production level to support this possibility?	
	Minimize emissions of regulated air pollutants and other contaminants	**Applicable regulations are cited as:**		
	that could impact human health during RA using an air monitoring	NJAC 7:27-8 Permits and Certificates for Minor		
	program, and minimize odors using BAT.	Facilities (and Facilities Operating without an Operating		
	Include procedures for investigating and addressing odor complaints	Permit) for stationary sources		
	Consider "area of potential impact" as 2,500 feet on either side of river	Clean Air Act, 42 U.S.C. §§7401-7671 at 40 CFR		
	COCs for health risk include: VOCs, dioxins and furans,	Subchapter C, Parts 50-97		
	PCBs and mercury. Other air pollutants include: PM10, PM2.5, CO,	EPA IRIS		
	SO2, and NO2/NOx from equipment operations. Additional	EPA Regional Screening Levels	When will the "concern and exceedance" levels focused on specific dioxins, metals, VOCs, SVOCs, pesticides, and PCBs mentioned for air quality in Section 5.1.3 be available?	
	pollutants found to have a high concentration in the sediment.	EPA Region 2 Clean and Green Policy		
	EPA established a "Concern" level and an "Exceedance" level	OSHA 29 CFR 1919.1000 - 1052		
	RD team to conduct background air quality monitoring prior to	New Jersey Air Pollution Control Act		
	construction. This will include the site and locations near and away	New Jersey Regulations (NJAC 7:27-3) Opacity Regulations		
	from the river. Submit a baseline air monitoring plan for this.	See page 30 of the PS for requirements of the plan.		
	RD Team to conduct dispersion modeling to estimate concentrations	Dispersion modeling to include 5 yrs. of meteorological		
	of parameters at sensitive receptors. An acceptable model such as	data, terrain data, and predict concentrations within		
	AERMOD will be used.	1,000 feet or the shoreline.		
	RD Team to prepare air quality monitoring plan and a modelling report.			
	See requirements for these on pages 31 - 34.	Odor regulated in NJ under N.J.S.A. 26:C-1 and N.J.A.C.		
	RD Team to develop a contingency plan for exceedances of the	7:27-1.1 and NJAC 7:27-5.2). Odor to be reported in		
	Concern Level (pg. 34) or the Exceedance Level (pg. 35)	accordance with RA CHASP, EPA to be notified within		
	RD Team to develop complaint management/reporting system (pg. 36).	24 hours and a report issued within 10 days on the		
	for air emissions and odor.	reasons for the odor and mitigation efforts.		
	Performance Standards for Noise			
	Remedial program must minimize noise during all operations. Potential	RD Team needs to verify the construction and operation	In Table 5.3.1 the comment section for a typical sound source for a crew/survey boat was a "Police patrol boat – single 175 hp Johnson outboard engine at full throttle. One boat at a given location." This is not a typical crew/survey boat and it will never be at full throttle so the example is too conservative.	
	noise levels must be documented through modeling, calculations, or	of the sediment processing facility will be in compliance		
	other efforts to verify that "air emissions for operations ..."	with NJ's Noise Control regulations (NJAC 7:29).		
	Areas/activities likely to cause noise impacts should be identified during	Pertinent regulations for noise: Federal Noise Control		
	the RD and contingency plans developed to control noise that	Action of 1972, NJ's Noise Control Act, noise control		
	exceeds standards.	ordinances for Newark, Kearney, and the Borough of North		
	Timing and location of RA operations must be planned to minimize	Arlington.		
	noise that could interfere with property use	RD Team responsible for characterizing existing noise	The quality of life standards should be applied to residential or mixed residential/industrial portions of the river and not to predominantly industrial areas.	
	Noise levels shall not exceed limitations established in Table 5.3-2 (pg. 47)	level throughout the PIZ at various times of day and night		
	for either daytime or nighttime operations.	through pre-construction noise monitoring.		
	Where practicable, use of equipment generating percussive noise			

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will be limited to daytime hours.	RD Team to develop land use inventory for modeling.		
Noise complaints to be investigated and addressed in a timely manner,	Greatest impact expected from in-river activities, occurring		
and resolution related to the complainant per Section 5.8.	24 hrs. a day.	Noise and Lighting QoLPS have impacts and may conflict with other EngPS (e.g., Productivity PS). For example, Productivity PS assumes 24-hr/day 6 days/week while noise and lighting PS significantly limit ability to work (dredging or capping) during evenings, nights, and weekends at the assumed rates.	
RD Team to develop a complaint management system. Monitoring is	RD Team to develop a monitoring and assessment		
required to begin within one hour of a compliant.	plan/program for noise baseline and RA monitoring.		
RD Team to develop a noise monitoring plan for RA.	RD Team to submit baseline noise monitoring report.		
Performance Standards for Lighting			
Develop procedures to control lighting impacts to riparian properties.	See Table 5.4-1 for lighting standards.		
RD to include requirements for downlighting, shrouds and other			
means to control lighting impacts to residents. Evaluate potential	Lighting "trespass" guidelines presented in Illuminating		
impacts during RD through modeling, line of site studies, calculations,	Engineering Society of North America guidance		
or other efforts to verify lighting will not impact local residents.			
Manage timing and location of RA operations to avoid interference with	Conduct study of area within 2,500 feet of river to		
property use.	focus modeling and monitoring on areas most likely to		
Areas/activities likely to cause lighting impacts should be identified during	experience impact.		
the RD and contingency plans developed to control nighttime light	RD Team to submit a light monitoring plan to EPA.		
intrusion particularly in residual areas.	RD Team to submit results in an ambient light monitoring		
Ensure lighting poses no risk to vehicular traffic in the area.	report.	Some of these QoLPS may only apply to certain portions of the work areas and at specific times. This should be recognized in the reports.	
Consider impact of existing screening on light intrusion during RD and RA.	RD Team to develop compliant management system.		
Lighting complaints to be investigated and addressed in a timely manner,			
and resolution related to the complainant per Section 5.8.			
Performance Standards for Navigation / Use of River			
Technology to review and select technology (type of dredging platform,	Additional details for this item are in Section 5.5 of the	Does this mean the RD team will evaluate and determine type of dredging equipment to be used for RA, such as hydraulic vs. mechanical dredging?	
size of equipment), work sequence, and other project controls as	Performance Standards for Quality of Life.		
necessary to control and minimize the impact of RA activities on			
other commercial and recreational users of the river.	RD Team to establish number and type of vessels to use		
The RD will develop procedures for managing traffic on the river during	in the river during RA.		
RA activities, maximizing alternative use as practicable.	Applicable regulations are cited as:		
Establish safe work zones around equipment during the RD.	US Code Title 33, Navigation and Navigable Waters,		
In the RD, develop procedures to communicate access restrictions for	Chapters 9 and 34; NJ Statutes Title 12 Commerce and		
small vessels during RA, where necessary. Clearly identify dates	Navigation, Chapter 7-23.1, Power Vessel Noise Control		
and locations of closures of portions of the river. Identify methods	Act; NJ Statutes Title 12 Chapter 7-45, Speed of Power		
for identifying these areas during the RD, as well as methods for	Vessels.	What model could be used to model vessel movement? We prefer to use drones to record actual vessel movement in the river, in addition to gathering information on these vessels. For the Lower Fox River, meetings were held with vessel operators to confirm/ revise information regarding vessel movement and assumptions regarding power usage, and that provided the information needed.	
enforcing restricted access, to be implemented during the RA. The	Table 5.5-1 summarizes activities to be evaluated,		
RD team will communicate with local enforcement agencies such as	includes modeling of vessel movement and design so		
the NJ marine patrol and the USCG, to obtain their input. During RA	that non-project-related vessel movement is not		
implement the standards set in conjunction with the local agencies.	hindered unnecessarily.		
RD Team to consult with USCG regarding acceptable navigation aids.	RD Team required to monitor vessel movement in the		
RD Team to submit monthly navigation report.	river to demonstrate compliance. Daily logs required.		
Performance Standards for Traffic			
RD to develop traffic management plan for remedial construction,	Additional details for this item are in Section 5.6 of the		
including construction of the sediment processing facility.	Performance Standards for Quality of Life.		
This plan should include estimates for on-site parking, sequencing	Regulations related to traffic standards: USCG drawbridge		
for arrivals, shipments, truck routes, etc., as well as penalties for	operation regulations for moveable bridges across the		
non-conformance of truck routes.	Passaic River (33:CFR 117.739 - Passaic River); NJDOT Rules		
RD to identify and evaluate activities likely to have significant impact of	Governing the Opening and Closing of Moveable Span		
local traffic, and mitigation measures to prevent overuse of	(Drawbridges) (NJAC 16:46); NJDOT Traffic Regulations		
existing infrastructure.	and Traffic Control Devices (NJAC 16:27);		
RD to include communications plan with procedures to communicate	NJDOT Truck Access (NJAC 16:32); NJDOT Transportation		
to impacted groups regarding RA that will impact marine, road or	of Hazardous Materials (NJAC 16:49); NJDOT Complete		
rail traffic.	Streets Policy #703; City of Newark Complete Streets		
Plan to address safety hazards associated with increased truck traffic,	Policy (Resolution #7R4-D).		
particularly on residential streets, during all project phases.	Traffic monitoring required during construction.		
Plan to address traffic at remote sites with significant impact, if any.			
Plan to include procedures to monitor and manage traffic entering			
and leaving the site(s) during RA to ensure compliance with the plan.			

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Informal questions or comments for EPA on the Performance Standards